(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/059285 A1

(51) International Patent Classification[7]: E05F 15/10, G01V 3/00

(21) International Application Number: PCT/CA2004/002146

(22) International Filing Date: 17 December 2004 (17.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/530,681 18 December 2003 (18.12.2003) US

(71) Applicant *(for all designated States except US)*: **INTIER AUTOMOTIVE CLOSURES INC.** [CA/CA]; 521 Newpark Boulevard, Newmarket, Ontario L3Y 4X7 (CA).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **PRIBISIC, Mirko** [CA/CA]; 6 Ballymena Court, North York, Ontario M3C 2B9 (CA).

(74) Agents: **PORAT, Alex** et al.; Magna International Inc., 337 Magna Drive, Aurora, Ontario L4G 7K1 (CA).

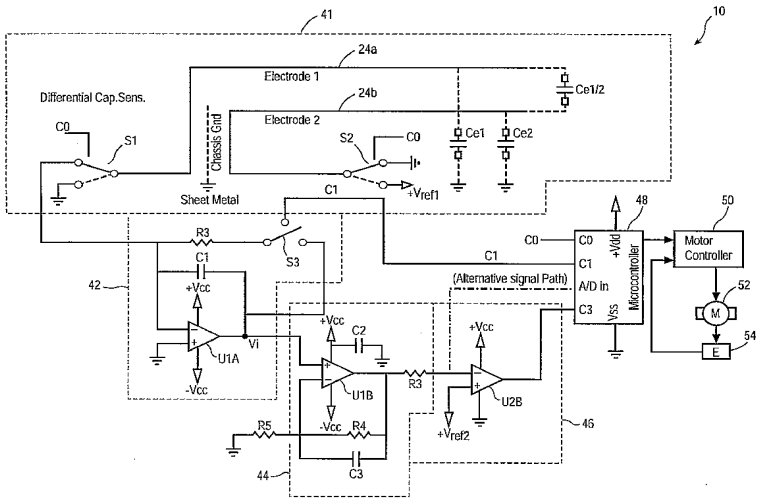
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DIFFERENTIAL ANTI-PINCH CAPACITIVE SENSOR



(57) Abstract: A proximity sensor for sensing an object in the path of or proximate to a closure panel such as a vehicle window. First and second electrodes encased in a non-conductive casing are mounted on the metallic structure near the closing edge of the aperture. The two electrodes define a capacitance CE1/2 therebetween, and parasitic capacitances CE1 & CE2 between the first electrode and chassis ground and the second electrode and chassis ground, respectively. A controller cyclically connects (1) the second electrode to a voltage reference source (Vref,) and the first electrode to chassis ground and (2) the second electrode to chassis ground and the first electrode to the reference capacitor, thereby periodically charging the capacitance CE1/2 and transferring the charge stored thereon to the reference capacitor whilst short-circuiting the parasitic capacitances. The charge on the reference capacitor, the time period required to charge the reference capacitor to a specified voltage, or a calculated value for CE1/2 are then compared against a reference value in order to derive an obstruction signal.

WO 2005/059285 A1